



# 基于 substrate 开发环境的 设置和调试技巧

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# Substrate应用架构

DAPP应用

PolkadotJS-APP 网页钱包

Math Wallet 插件/APP钱包

Polkadot JS

Runtime Node (Polkadot / Kusama / ChainX / 你的应用链...)

Substrate





# 各个模块的说明

- Substrate：应用链框架，包含了各种模块，可以快速启动一个自定义的区块链  
<https://github.com/paritytech/substrate/>
- Polkadot：基于Substrate的区块链，将来是波卡主网，目前Kusama实验网也基于这套代码  
<https://github.com/paritytech/polkadot/>
- PolkadotJS：与Substrate交互的JS框架  
<https://github.com/polkadot-js/api>
- PolkadotJS-APP：React开发的基于PolkadotJS API的网页钱包  
<https://github.com/polkadot-js/apps>



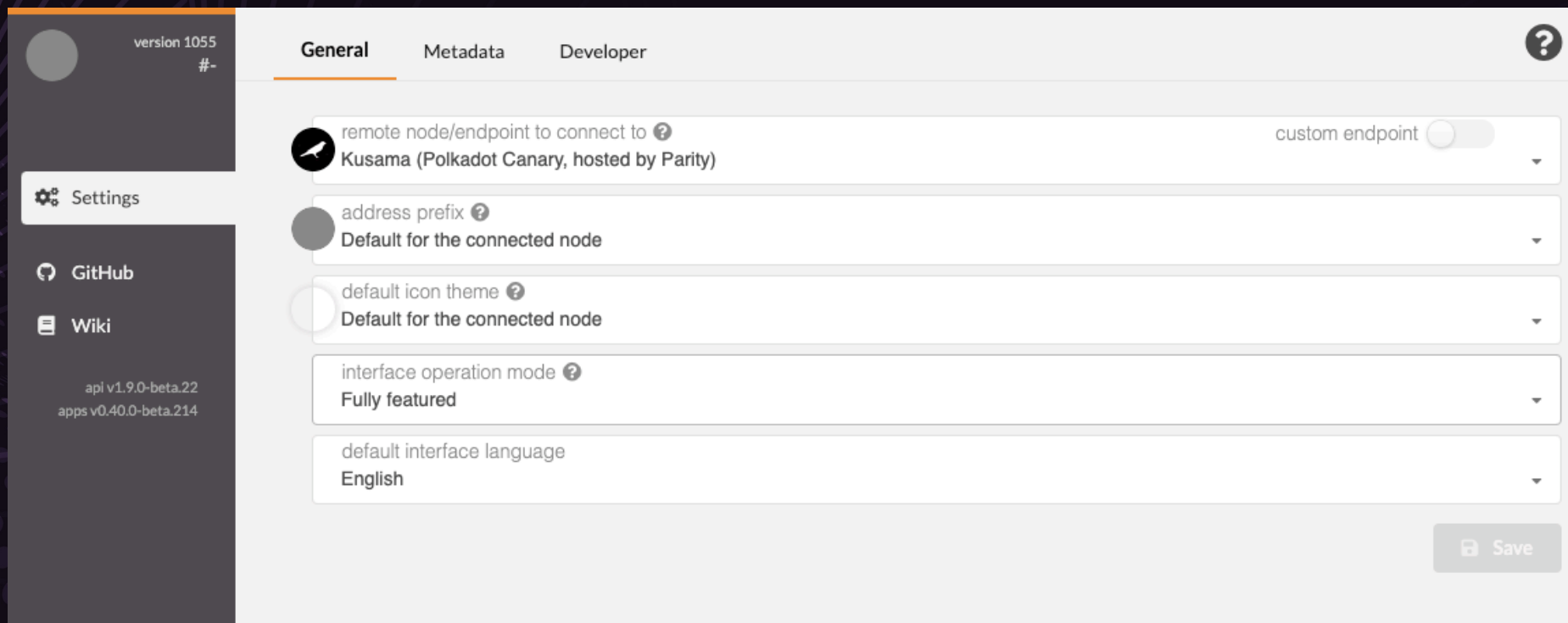
# 名词解释

- Runtime – 特定区块链可定制的部分
- Extrinsics – 区块链的外部输入，也可理解为交易



# PolkadotJS-APP 网页钱包配置和使用指南

- <https://polkadot.js.org/apps/>



The screenshot displays the PolkadotJS-APP settings page. On the left, a sidebar contains a version indicator (version 1055, #-), a 'Settings' button with a gear icon, and links to 'GitHub' and 'Wiki'. Below these, it shows 'api v1.9.0-beta.22' and 'apps v0.40.0-beta.214'. The main content area has three tabs: 'General' (selected), 'Metadata', and 'Developer'. A help icon (?) is in the top right. The 'General' tab contains several settings: 'remote node/endpoint to connect to' with a dropdown menu showing 'Kusama (Polkadot Canary, hosted by Parity)' and a 'custom endpoint' toggle; 'address prefix' with a dropdown showing 'Default for the connected node'; 'default icon theme' with a dropdown showing 'Default for the connected node'; 'interface operation mode' with a dropdown showing 'Fully featured'; and 'default interface language' with a dropdown showing 'English'. A 'Save' button is located at the bottom right of the settings area.

version 1055  
#-

Settings

GitHub

Wiki

api v1.9.0-beta.22  
apps v0.40.0-beta.214

General Metadata Developer

remote node/endpoint to connect to ?  
Kusama (Polkadot Canary, hosted by Parity) custom endpoint

address prefix ?  
Default for the connected node

default icon theme ?  
Default for the connected node

interface operation mode ?  
Fully featured

default interface language  
English

Save



# PolkadotJS-APP 网页钱包配置和使用指南

- 创建账号
- 发起转账
- Extrinsics
- Chain state

Extrinsic submission

using the selected account  
TEST (EXTENSION) free balance 0.000 KSM  
HFFDdZsQXg84w7PHqatgWJoAmQ3N1BkSEK1bF826KWRJ1BW

submit the following extrinsic ?  
system setCode(code) Set the new runtime code. ▾

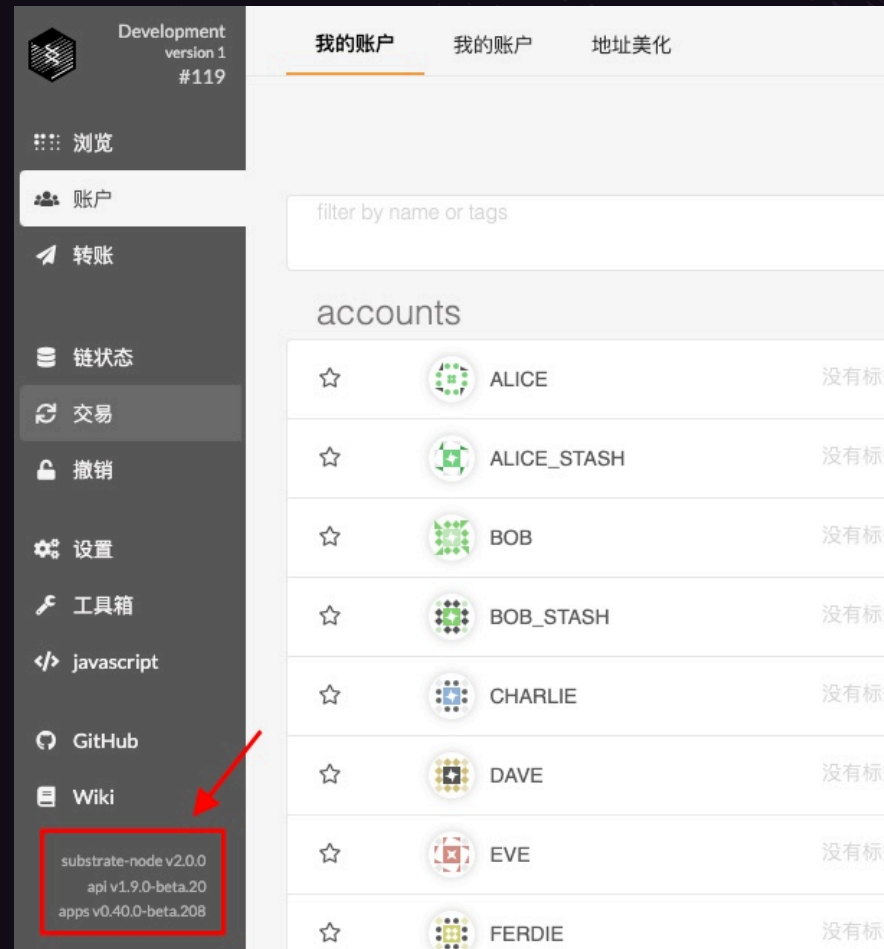
code: Bytes  
0x

Submit Unsigned or Submit Transaction



# 模块版本和兼容性

- 目前不管是 Substrate , Polkadot , PolkadotJS 还是 PolkadotJS-APP 都在快速迭代中，因此各个版本之间存在大量不兼容的情况
- 可以通过 PolkadotJS-APP 左下角查看当前运行环境的版本
  - 第一行：node的版本
  - 第二行：PolkadotJS版本
  - 第三行：PolkadotJS-APP版本





# Substrate Node 1.0

- Substrate Collectable Workshop Setup  
<https://substrate.dev/substrate-collectables-workshop>
- Node  
./target/release/substratekitties --dev
- Test  
<http://app.substrate.cc>

```
substrate-node v1.0.0  
api v0.95.1  
apps v0.36.0
```





# Substrate Node 2.0

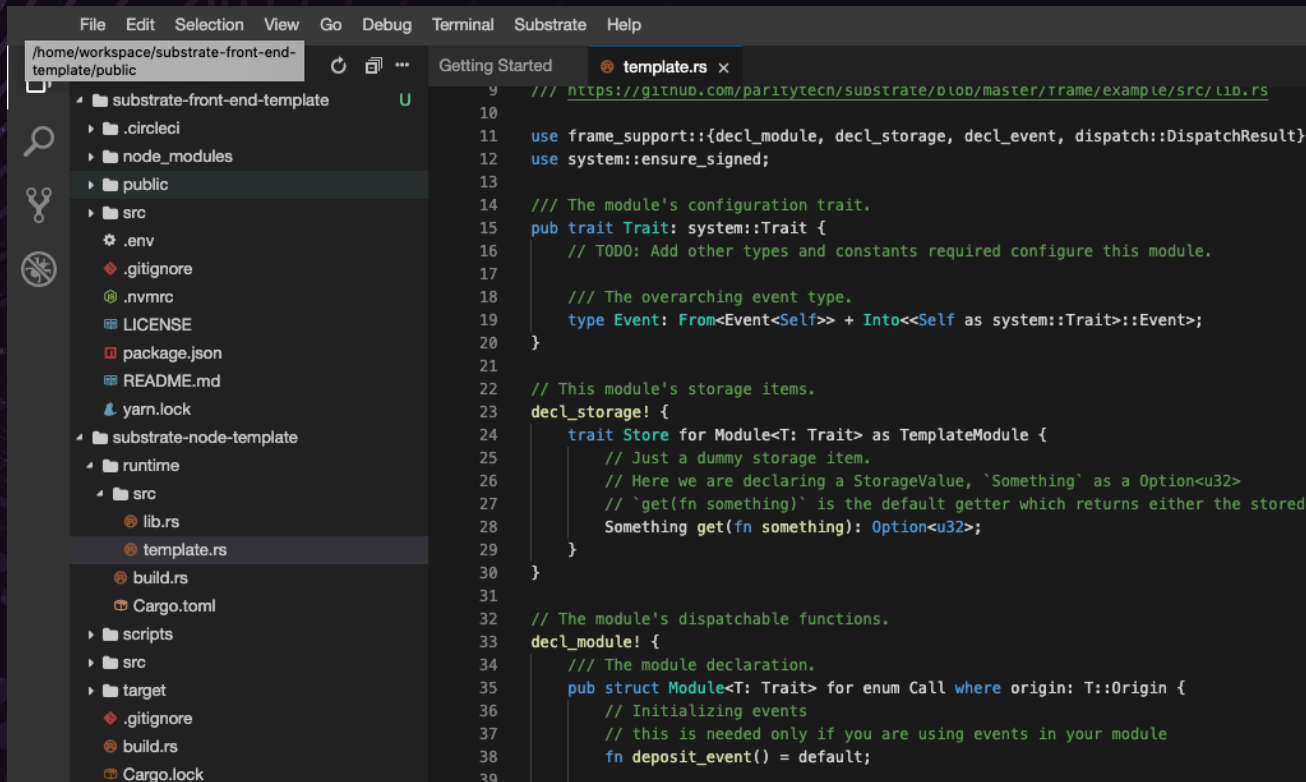
- Substrate 2.0 Node Template Setup  
<https://substrate.dev/docs/en/tutorials/creating-your-first-substrate-chain>
- Node  
`./target/release/node-template --dev`
- Test  
<http://app2.substrate.cc>

Substrate Node v2.0.0  
api v1.2.0-beta.22  
apps v0.40.0-beta.32

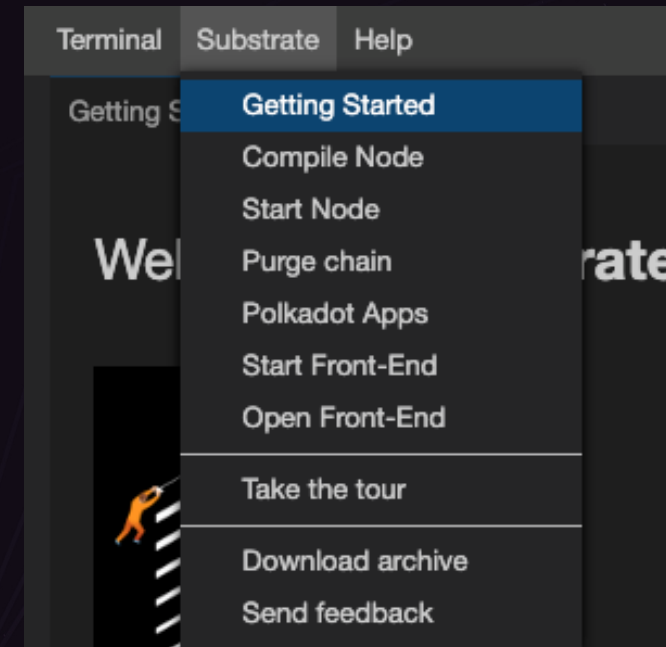


# Substrate Playground

- <https://playground.substrate.dev/>



```
File Edit Selection View Go Debug Terminal Substrate Help
/home/workspace/substrate-front-end-template/public
Getting Started template.rs x
9 // https://github.com/paritytech/substrate/blob/master/frame/example/src/lib.rs
10
11 use frame_support::{decl_module, decl_storage, decl_event, dispatch::DispatchResult};
12 use system::ensure_signed;
13
14 /// The module's configuration trait.
15 pub trait Trait: system::Trait {
16     // TODO: Add other types and constants required configure this module.
17
18     /// The overarching event type.
19     type Event: From<Event<Self>> + Into<<Self as system::Trait>::Event>;
20 }
21
22 // This module's storage items.
23 decl_storage! {
24     trait Store for Module<T: Trait> as TemplateModule {
25         // Just a dummy storage item.
26         // Here we are declaring a StorageValue, 'Something' as a Option<u32>
27         // 'get(fn something)' is the default getter which returns either the stored
28         // Something get(fn something): Option<u32>;
29     }
30 }
31
32 // The module's dispatchable functions.
33 decl_module! {
34     /// The module declaration.
35     pub struct Module<T: Trait> for enum Call where origin: T::Origin {
36         // Initializing events
37         // this is needed only if you are using events in your module
38         fn deposit_event() = default;
39     }
40 }
```







# Substrate Latest

- 下载代码和安装

```
git clone https://github.com/paritytech/substrate.git  
export WASM_BUILD_TYPE=release  
cd substrate  
cargo build
```

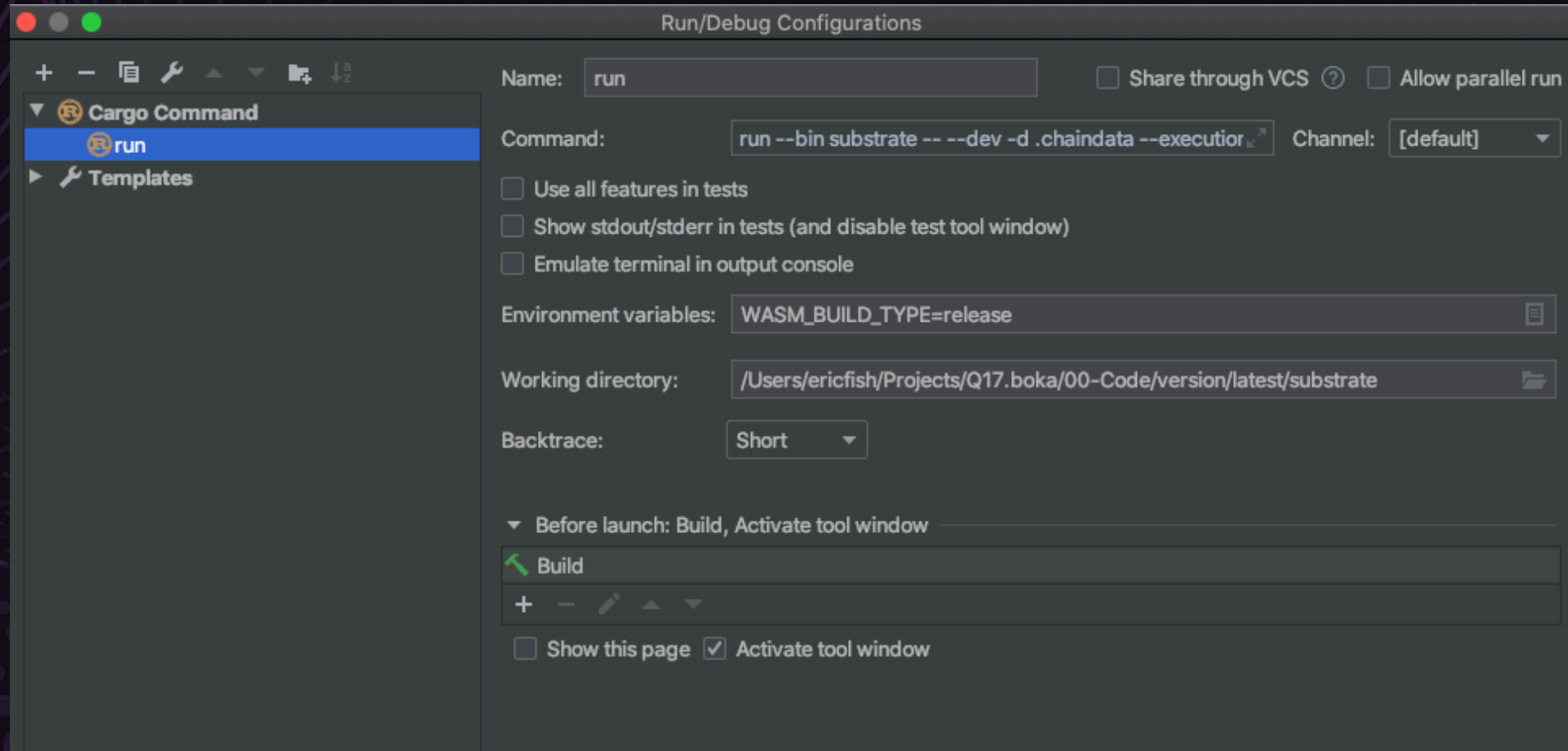
- 运行

```
cargo run --bin substrate -- --dev -d .chaindata --  
execution=NativeElseWasm
```

- 删除数据

```
rm -rf .chaindata
```

# DEBUG in CLion








# Thanks

***Boka.Network***

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